Swing

The invention relates to a swing and in particular to a children's swing for being suspended on a carrier beam, and also relates to a frame.

Previously, e.g., a multi-child swing of the "bird's nest" type was known that is marketed by numerous toy manufacturers. This swing has a robust design and is preferably used in playgrounds in a stationary manner on a carrier beam. This swing has a round frame, viewed from above. The swing is suspended on four equally spaced fastening points to its frame via ropes, chains or rods on two spaced suspension points of a carrier beam. A plurality of heavy linking elements that are connected to each other in a closely meshed manner form a downwardly curved shape on the frame in which shape children can stand, sit or lie down.

Publication DE 74 25 876 U shows, e.g., a swing with a circular frame in which a flexible bottom is suspended by a rope.

Furthermore, publication DE 19 750 506 A1 shows a swing seat composed of elements that can be inserted into each other.

This invention has the problem of providing an improved swing that can be readily manufactured, assembled and disassembled.

This problem is solved by the combination of the features of Claim 1 of the invention.

Further developments of the invention are defined in the dependent claims.

A swing in accordance with the invention consists, e.g., of four side elements and four connecting elements. The four side elements and four connecting elements together form a frame. A plurality of interwoven band elements is attached to the frame that form a bearing surface within the frame. The band elements comprise fastening elements on their two end sections which fastening elements can be connected to the side elements.

As a consequence thereof, the swing consists of very few parts. The interwoven band elements create a pleasant bearing surface that can carry, as a function of its size, one or several children in a sitting or lying position. In addition, the swing is particularly light due to the formation of the bearing surface consisting of band elements.

The frame can be designed in a rectangular manner viewed from above, that is, it can have a quadratic shape or some other rectangular shape.

This simplifies the mounting and use of the swing. They can be performed by anyone.

In a further development the fastening elements of the band elements are designed as loops. The side elements can be simply run through the loops.

This makes it very simple to attach the band elements to the side elements, that require no additional fastening means. The replacement of a damaged band element is possible at any time and requires only the loosening of the frame, the drawing out of two side elements and the replacement by a new band element.

It is especially preferable if the loops are woven into the band elements.

This renders this connection particularly wear-resistant and tear-resistant.

The frame can consist in a further development of eight side elements and eight connecting elements.

This makes possible another attractive shape of the frame and of the bearing surface.

Furthermore, the side elements can be designed as tubes and at least one tube can be curved. This forms, together with the band elements, a downwardly curved bearing surface.

The designing of the side elements as tubes creates a frame that is light yet stable. The curvature of the tubes makes possible the curved bearing surface, that for the one has an attractive shape and for the other forms a pleasant and secure bearing surface adapted to the body for persons, e.g., children. The bearing surface consisting of the interwoven

band elements can be fixed either loosely or under tension by virtue of the position of the curved tube or curved tubes.

In another embodiment the swing can be suspended on four fastening devices on four connecting elements of the frame.

This makes possible a stable, weight-balanced suspension on four points that are spaced almost as far as possible from each other.

In a preferred further development the connecting elements are bent tube sections consisting of a lower and an upper half shell so that the side elements, whose outer diameters correspond approximately to the inner diameters of the connecting elements, can be clamped between the upper and the lower half shell. That is, an end of a tube is clamped between the upper and the lower half shell. Two tubes can be clamped to one connecting element.

This achieves a ready assembly and disassembly with only a few fastening means. The number of structural components is small and the space required in the disassembled state is minimal.

It is especially preferable if the fastening devices consist of screw elements that function at the same time as a clamping device for the lower and the upper half shell of the connecting elements.

This further reduces the number of necessary components.

In an especially preferred embodiment the connecting elements and side elements are manufactured from light metal, e.g., aluminum, are weather-resistant and surrounded with a suitable damping material, e.g., foam, rubber or the like as a protection against bumps.

This makes possible at the same time a corrosion-protected, reliable and light swing.

The swing can be assembled in that the band elements are attached to three side elements and that the band elements are interwoven and only then the last side element is

run through the remaining loops of the band elements. For example, a part of the band elements is first fastened to two opposite side elements, that is, run through the loops, then the other part of the band elements is woven transversely to the one part of the band elements through these band elements and then the remaining two side elements are pushed successively through associated loops. The sequence could also be different; however, in this instance a fourth side element must always be assembled as the last one.

The connecting elements are preferably assembled only after the attaching of the band elements to the side elements and after the weaving of the band elements.

This facilitates the assembly and in particular makes possible a tension-free weaving of the band elements.

This makes it possible to disassemble the swing rapidly in order to store it, e.g., as a function of the time of year or to transport it and reassemble it. As a consequence thereof, the swing can also be marketed in an especially compact form and as a kit.

Furthermore, the swing can be suspended in the form of a single-point-, two-point or other multi-point suspension.

As a result, various possibilities of use are possible for the swing.

Figure 1 shows a schematic perspective overall view of an exemplary embodiment of the swing.

Figure 2 shows a schematic perspective view of a side element.

Figure 3 shows a schematic perspective view of a connecting element.

Figure 4 shows a schematic perspective view of a band element.

Figure 5 shows a schematic perspective view of a fastening element.

Figure 1 shows a schematic, perspective overall view of a swing 1 obliquely from above. Swing 1 consists of four tubes 2 bent slightly downward in the middle (see also figure 2), that function as side elements. Tubes 2 are arranged in a rectangular form in a

top view. Opposite tubes 2 are designed in the same shape. Tubes 2 on the longer side of the rectangle are designated below as longitudinal tubes. Tubes 2 on the shorter side of the rectangular are designated below as transverse tubes. Tubes 2 are connected on the ends to corner connectors 3 functioning as connecting elements. Corner connectors 3 are almost right-angle tube sections. The ends of tubes 2 are pushed into corner connectors 3. Bearing surface 7 is formed from bands 5 woven to each other in a chessboard pattern that function as band elements. Bands 5 are fastened on the ends to tubes 2. Bands 5 parallel to the longitudinal tubes are designated below as longitudinal bands and bands 5 parallel to the transverse tubes are designated below as transverse bands.

According to figure 4 bands 5 are provided on their end sections with woven loops 6 that can be readily manufactured and function as fastening devices. Bands 5 are designed in one piece and have a woven-in loop 6 on their end sections, that is, the band consisting of one layer is divided at the beginning of loop 6 into two superposed layers and becomes one layer again at the end of the loop. A woven area between loop 6 and the band end projects. The band ends (the woven area) are coated with adhesive in order to provide an additional protection against bumps.

According to figure 3 corner connectors 3 consists of upper half shell 3a and lower half shell 3b. That is, corner connectors 3 are divided approximately in the middle in the plane of the right angle. This facilitates the assembly of swing 1 and tubes 2 can be connected to each other by a simple clamping connection by screwing the two half shells together.

Frame 4 of swing is suspended on its four corner connectors 3. Eyebolt 8 forms a clamping device. Eyebolts 8 consist of an eyelet and a threaded pin. Eyebolts 8 are screwed into corner connectors 3 at their corner (middle). At the same time the two half shells 3a, 3b are screwed to one another by the threaded pin of eyebolt 8. Either a threading is present in lower half shell 3a into which threading eyebolt 8 is screwed or a self-locking nut is present. Eyebolt 8 is screwed in in such a manner that the eyelet faces

upward. The screwing in is readily possible with a simple tool. A swing suspension, that is, a rope, cable, chain or the like is fastened to the eyelet.

Swing 1 is assembled in that loops 6 of transverse bands (longitudinal bands) are pushed onto a longitudinal tube (transverse tube). Bands 5 contact each other thereby in order to form a closely meshed net 7 later that serves as bearing surface. Next, the opposite tube is pushed through loops 6 on the other ends of the transverse bands (longitudinal bands). Each longitudinal band (transverse band) could also be first pushed successively onto the one tube then onto the other tube. Next, loops 6 of one end of longitudinal bands (transverse bands) are pushed onto a transverse tube (longitudinal tube). Again, even the longitudinal bands (transverse bands) contact each other. Then, the longitudinal bands (transverse bands) are successively woven vertically to the transverse bands (longitudinal bands into the transverse bands (longitudinal bands). That is to say that, e.g., the first transverse band (longitudinal band) is run over the first longitudinal band (transverse band), then under the second longitudinal band (transverse band), then again over the third longitudinal band (transverse band) and so forth. The second transverse band (longitudinal band is then run, e.g., under the first longitudinal band (transverse band), then over the second longitudinal band (transverse band), then again under the third longitudinal band (transverse band) and so forth. The same procedure is used with all transverse bands (longitudinal bands). After the interweaving has been completed, the other ends of the longitudinal bands (transverse bands) with loops 6 project on the opposite side of the one transverse tube (longitudinal tube). The other transverse tube (longitudinal tube) is pushed through these loops 6. Then, corner connectors 3 are assembled in that the two tube ends are positioned in a half shell 3b of corner connector 3 on a corner of the bearing surface and then the other half shell 3a is placed thereupon. Then eyebolt 8 is screwed into corner connector 3 and tubes 2 clamped with corner connector 3 by screwing in and tightening eyebolt 8. The same procedure is used with all four corner connectors 3.

Tubes 2 consist in this exemplary embodiment of aluminum and have a circular cross section. Tubes 2 are jacketed with a soft and gummed damping layer, e.g., rubber. Corner connectors 3 are also jacketed. This ensures the required bump protection in accordance with toy regulations.

The suspension of the swing on a carrier beam (not shown) can take place either on two points or on one point. For example, a rope is first knotted on eyebolt 8. The rope is then looped through a swing ring and run back again until it ends at approximately half-way at a Stellacht-Variohaken [This appears to be a trademark name for a device that translates as "Eight-Position Variohook"]. The fastening on the other four eyebolts 8 also takes place in the same manner. Depending on the type, the suspension has two swing rings (two-point suspension) or one swing ring (one-point suspension). The swing can then be adapted to the carrier beam to the desired height and counterbalanced horizontally when being hung by adjusting the Eight-Position Variohook.

The stability of the swing is given. Tubes 2 are connected with corner connectors 3 in a simple but effecting clamping connection. When net 7 is loaded, the forces produced are transferred via loops 6 onto tubes 2, that are pressed as a consequence into corner connectors 3 so that the frame is additionally stiffened as a result. The same also applies to the suspension, especially for one-point or two-point suspensions, in which the occurring forces always press tubes 2 and corner connectors 3 against each other and thus prevent a loosening of frame 4.

The swing can also have a quadratic shape or be assembled in any other desired even-numbered polygonal shape. In the quadratic shape the longitudinal tubes and the transverse tubes as well as the longitudinal bands and the transverse bands are identical. As a result thereof, the number of required different parts is reduced. For achieving a simple assembly, a swing with six or eight sides or corners should also be emphasized at this point.

The band elements could also be woven with each other in a different manner so that different weaving patterns are formed. The band elements could also be spaced laterally from each other.

The band elements could also comprise different fastening elements such as, e.g., sewn-on loops or eyelets.

Furthermore, the connection between side element and connection element can also be a positive the connection. The connecting elements do not have to absolutely consist of two half shells but rather could also be designed in one piece. In addition, the side elements could also be pushed as tubes over the corner connectors and not into the corner connectors. The tubes could have a round, oval or angular cross section in which case the corner connectors would have to be appropriately designed. The corner connectors could also be designed not in a rectangular manner such as, e.g., in a hexagonal or octagonal frame.

All side elements could also be designed to be straight. Alternatively, only one or more side elements could be curved, so that different curvatures of the bearing surface can be formed. The curvature of the tubes can be the same or different.

The side elements can also be manufactured from plastic or wood or some other material. Moreover, even the corner connectors can be produced from different materials. Furthermore, even the band elements can be formed from other or different materials.

The swing can be made in many sizes.

The components of the swing could be made in any colors of differently colored bands. Thus, many patterns of the bearing surface can be formed by using differently colored bands.

The swing could also be suspended on more than four connecting elements or fastening devices. In addition, the swing can also be suspended on only two connecting elements. Furthermore, the suspension can be made on two or more side elements.

The swing can be used in the private sector, in kindergartens, on playgrounds or in physiotherapy.

Moreover, the frame of the swing can be arranged in such a manner that several polygons such as, e.g., rectangles, border each other and in this manner several bearing surfaces that border each other can be formed. In this instance side elements bordering each other form common side elements and corner connectors bordering each other form common corner connectors. In this instance corresponding corner connectors are used that can connect more than two side elements to each other.

Furthermore, the band elements woven to the bearing surface can be irreversibly connected to each other by a contact means before or after assembly of the side elements. The contact means is sprayed or painted onto one or both sides of the bearing surface. Alternatively, the bearing surface can be immersed into the contact means. After hardening of the contact means, during which, e.g., a chemical connection between contact means and band elements takes place, a one-piece, closed bearing surface is obtained in this manner.

The side elements can be connected to the connecting elements not only frictionally but also positively or frictionally and positively. In this case the side elements can consist of tubes that are widened out on the ends over a certain length. The connecting elements can consist of two half shells for receiving and engaging the tube ends. The half shells can have a recess or circumferential groove whose diameter corresponds to the outside diameter of the widened-out tube section. The widened-out tube end engages positively into this recess. A positive connection is then present between tube and connecting element when the half shells are brought together, that are, e.g., screwed together, with the received tube end. In this instance and in the connected state a radial movement of the tube (in the circumferential direction of the tube) is possible whereas an axial movement of the tube (in the direction of the longitudinal axis

of the tube) is limited or not possible at all as a function of the width of the recess and of the length of the widened-out section of the tube.

The frame cannot only be designed as a swing in the narrow sense but also as a seat that can be suspended or as a suspended chair with four side elements, which side elements of the seat can be curved in such a manner that a seating surface as well as a backrest are simultaneously formed.

Furthermore, the frame can be designed as a seat or suspended chair in such a manner that four side elements and four corner connectors form a rectangular backrest and a rectangular seating surface that border one another. In this instance a common side edge of seating surface and of backrest, that is, the edge of the seating surface and of the backrest bordering one another, are formed by a common side element and the two corresponding, bordering corner connectors are also formed by common corner connectors.

Two seats designed in this manner adjacent to another with correspondingly common side element and corner connector can form a two-seater. A multi-seater with more than two seats is also possible.

Moreover, two or more adjacent rectangular frames of side elements and corner connector with bearing surfaces or woven bands can form a lying surface such as, e.g., a bed.